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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,209	07/24/2003	Irving W. DeVoe	E2002-700019	9677
37462	7590	04/24/2006		EXAMINER
LOWRIE, LANDO & ANASTASI RIVERFRONT OFFICE ONE MAIN STREET, ELEVENTH FLOOR CAMBRIDGE, MA 02142			MENON, KRISHNAN S	
			ART UNIT	PAPER NUMBER
			1723	

DATE MAILED: 04/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/626,209	DEVOE, IRVING W.
	Examiner Krishnan S. Menon	Art Unit 1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 19 April 2006.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) 1-41 and 60-65 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 42-59 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

Claims 1-65 are pending as amended 4/19/06, of which claims 1-41 and 60-65 were withdrawn.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 57-59 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 57 recites "the pressure chamber" at line 3, which has no antecedent basis. This is considered as 'solute chamber' for examination purpose.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 50-56 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The subject matter claimed in claim 50 is represented by figure 4 and page 16 line 19 – page 17 line 3. Figure 4 shows a push rod 78 being advanced by the

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pressure build-up in the pressure chamber 30 by osmosis. The disclosure in the specification says the rod also retracts as follows:

The push rod 78 moves faster relative to the first piston 69. After the push rod 78 moves fully forward, due to the increased pressure in the pressure chamber 30, the push rod 78 reciprocates back to a starting position.

The increased pressure in the pressure chamber 30 would only push the rod forward; it would not retract the rod. There is no explanation or mechanism shown for the push rod to reciprocate back, without which the any energy conversion is not possible as claimed in the dependent claims. Subsequent paragraphs disclose 'a return spring or other devices', or 'a second power supply system' to reciprocate the push rod 78, but sufficient details are not provided for one of ordinary skill in the art to practice the invention without undue experimentation.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 42,43,50-55 rejected under 35 U.S.C. 102(b) as being anticipated by DE

3121968

DE teaches a method of pressurizing a solute solution and converting the pressure to energy (by a turbine or by a reciprocating machine, which is a piston machine: see claims 22, page 8, and 28, page 9 of the English translation of the

reference; piston in the reciprocating machine has linear displacement) using a solvent by passing the solvent across into the solution through a semipermeable membrane – see figures. The solution is exhausted after the pressure is converted to energy as claimed. The solvent chamber is pressurized by a pump – see figure 1, pump 22.

2. Claims 57-59 are rejected under 35 U.S.C. 102(b) as being anticipated by Loeb (US 3,906,250).

Loeb'250 teaches (see figure 3 and 4) a method of producing vacuum comprising a semipermeable barrier separating a pressure chamber and a solvent chamber, wherein the pressure chamber has a solution (sea water) and solvent chamber has a solvent (river water), the solvent flows from the solvent chamber to the pressure chamber across the membrane, and the solvent chamber has a vacuum (because pressure is zero atm in figure 3 and 4 in river water chamber). The claims recite the solvent chamber as closed and pressure chamber as open. The solvent chamber in the reference could be closed to flow of river water and the pressure chamber could be open to flow of sea water as desired, and the apparatus would be inherently capable of doing so. Note that the reference teaches that the process would eventually stop without flow, which supports the inherent teaching of closed solvent chamber (see column 4 lines 25-53, and especially 47-50). Under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently

perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986). See also figure 11, which is a closed system with the solvent chamber having only inflow, wherein the solvent chamber is at zero pressure.

The solute-solution is exhausted from the pressure chamber as in claim 58 – see flowing through the turbine.

With regard to the step of controlling the flow of solvent from the solvent chamber as in claim 59, the reference teaches that the transient process would ultimately stop without flow through the chambers, and a continuous process could be carried out by the outlined control of the process – see column 4 line 55 – column 5 line 10, and figures 3a and 4a. Please note that the river water pressure is still maintained essentially at zero. See also figure 11, wherein the solvent chamber is at zero pressure, and the process is maintained continuous by a controlled inlet flow equal to the flow through the membrane.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over DE-3121968 as applied to claim 55 above in paragraph 3, and further in view of Loeb (US 4,193,267).

Claim 56 differs from the teaching of DE-968 in the recitation of the external pressure pump being energized by the energy converted from the pressure chamber. Loeb'267 teaches a solvent pressure pump (22-figure 1) which is energized by the energy from the pressure chamber of process for producing energy from osmosis (column 4 lines 1-7 and 23-30). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Loeb'267 in the teaching of DE-968 to have the pressure pump driven by the energy produced by the process itself. It would be obvious to one of ordinary skill in the art to use the energy indigenously available to drive the pump.

4. Claims 42-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loeb (US 3,906,250) in view of DE 31 21 968.

Claims 42 and 50: Loeb'250 teaches a method of producing high pressure and energy by providing (see figure 6) a solvent chamber (river water), a solute-solution chamber (concentrated brine), semipermeable membrane separating the solvent and solution chambers (in 60), so that solvent diffuses through the membrane to pressurize the solution, converting the increased pressure to energy (by turbine 67). See also column 8 line 59 – column 9 line 47. Also see figure 10, 11, etc.

Claims differ from the teaching of Loeb'250 in the recitation of the hydraulically driven piston for energy conversion, or displacement. Loeb teaches a turbine for energy conversion. DE teaches that a reciprocating machine or a turbine could be used as alternates for the process. It would be obvious to one of ordinary skill in the art at the

time of invention to use a reciprocating machine, which works with linear displacement of pistons, as alternate but equivalent to the turbine for energy conversion in the teaching of Loeb. Also, an express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). In this case, a reciprocating engine or a turbine are equivalents for power conversion.

Claim 43: exhausting solvent solution from the pressure chamber – see passing through the turbine to reduce pressure to zero (column 8 lines 65-68) (Note: exhausting is considered as in ‘exhausting of its energy’, and not necessarily as being discarded, even though discarding the solution after depleting its energy is also contemplated – see figure 3.)

Claim 44: recycling the solution – see figure 6: recycled through the evaporator 70.

Claims 45,46 and 49: evaporation and return of solute to the pressure chamber – see evaporation pond 70 and the return line for concentrated brine. Also see figure 10 and column 13 lines 28-50.

Claims 47 and 48: see figure 10 wherein the solvent evaporated (in distillation plant 130) is also recycled through the solvent chamber of 124.

Claim 53: converting pressure to energy – see turbine 67 in figure 6.

51,52,54 and 55 further recite the step of pressurizing the solvent chamber (claims 51 and 54) by a pump (claims 52 and 55), which Loeb'250 does not specifically teach. However, Loeb'250 teaches passing the lower osmotic pressure water (river

water) in figure 6 or the condensed solvent in figure 10 and 11, which inherently require means for pumping or a pump. A prima facie case under 35 U.S.C. 102 /103 could be made if a process step is inherent: *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977) (Applicant claimed a process for preparing a hydrolytically-stable zeolitic aluminosilicate which included a step of "cooling the steam zeolite ... at a rate sufficiently rapid that the cooled zeolite exhibits a X-ray diffraction pattern ...." All the process limitations were expressly disclosed by a U.S. patent to Hansford except the cooling step. The court stated that any sample of Hansford's zeolite would necessarily be cooled to facilitate subsequent handling.

### **Response to Arguments**

Applicant's arguments filed 4/19/06 have been fully considered but they are not persuasive.

Arguments about the Loeb reference with regard to claims 42 and 50 are moot; new grounds for rejection. Arguments about claim 57 are not persuasive; Loeb teaches zero pressure in the solvent chamber, which means a vacuum or void. More over, the flow into the solvent chamber can be controlled, thereby the pressure in the solvent chamber can be maintained at a desired value. Claim 57 is also not patentable because it is only an elaboration of the principle of osmosis, wherein when a solvent is separated from a solution by a membrane, the pressure in the solvent chamber will reduce and the pressure in the solution chamber will increase as the solvent migrates into the solution through the membrane because of osmosis. The solvent chamber thus

would have a vacuum, or reduced pressure. Figure 1, 2a and 2b of Loeb explains this principle.

The argument that Loeb continuously replenishes the solvent chamber and therefore, there can be no vacuum is also not persuasive. A vacuum or a reduced pressure would result from the permeation of solvent from the solvent chamber to the solution chamber. Applicant's figure 3 shows a recycle system wherein the solvent is recycled, and without the solvent recycle, the system would not work to produce any useful output of energy. If applicant's claim 57 is based on Figure 1 or 2a, then the claim would not be patentable under 35 USC 101: no utility.

Arguments with respect to the DE reference is also not persuasive; DE teaches a reciprocating machine in place of the turbine as shown in the rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S. Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Krishnan S. Menon  
Patent Examiner  
4/22/06